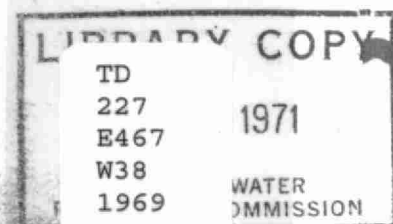


1969

**OPERATING
SUMMARY**

ELORA

***water pollution
control plant***



TD 227 E467 W38 1969
1971
WATER RESOURCES COMMISSION

ONTARIO WATER RESOURCES COMMISSION

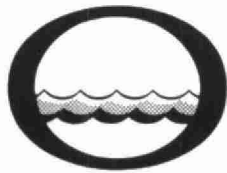
Division of Plant Operations

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Water management in Ontario

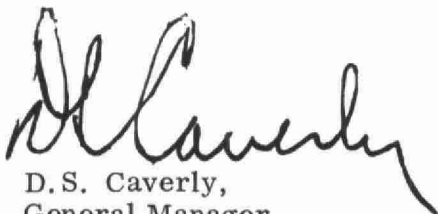
Ontario
Water Resources
Commission


135 St. Clair Ave. W.
Toronto 195
Ontario

The operating efficiency and financial status of the water pollution control facilities operated for you in 1969 are presented in the following pages.

The regional operations engineer's comments and the statistical data will assist you in gauging the plant's level of performance. A new flow chart and up-to-date design data are also provided.

Various divisions and sections within the Commission have co-operated in providing what we trust is an accurate and concise annual operating summary.


D.S. Caverly,
General Manager.


D.A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

TD
227
E467
W38
1969
MOE

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ELORA
water pollution control plant

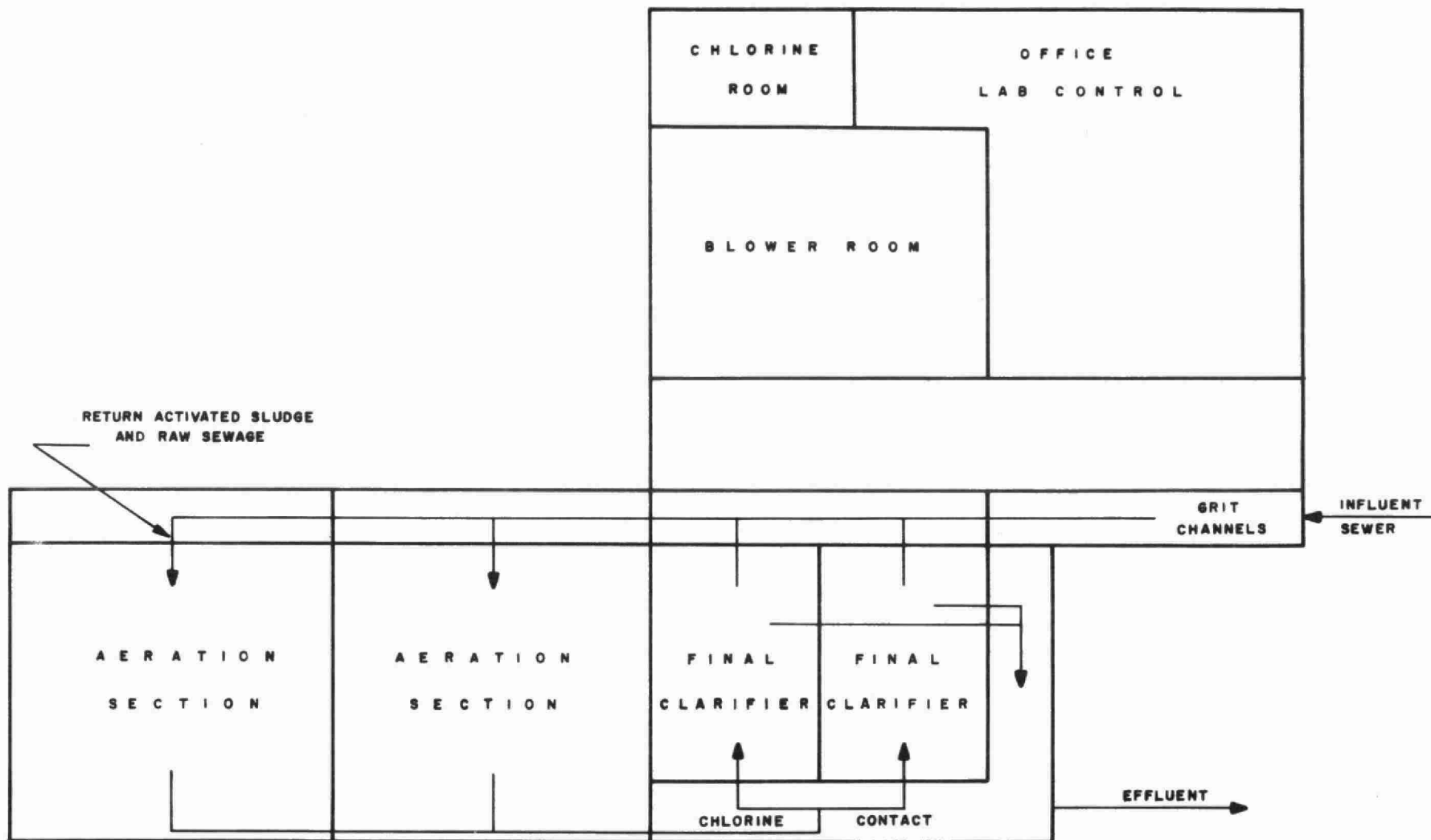
operated for

THE VILLAGE OF ELORA

by the

ONTARIO WATER RESOURCES COMMISSION

1969 ANNUAL OPERATING SUMMARY



ELORA WPCP
FLOW CHART

DESIGN DATA

PROJECT NO.	2-0125-62	TREATMENT	Extended Aeration
DESIGN FLOW	0.083 mgd	DESIGN POPULATION	1,000
BOD - Raw Sewage	210 mg/l	SS - Raw Sewage	250 mg/l

PRETREATMENT

Screening (at pumping station)

- Two coarse bar screens

Pumps - Robert Morse

- Two 300 gpm (electric) @ 47' tdh

Grit Removal

Type: Grit channels

Size: Two 10' x 2'

SECONDARY TREATMENT

Aeration Tanks

Type: Single-pass

Size: Two 32' x 20' x 11' (14,100 cu ft
or 87,800 gal)

Retention: 25.4 hr

Air Supply

Type: Sutorbilt; variable speed pulley

Size: Two 183-370 cfm each

Diffusers

Type: Spargers

Size: 16 per tank @ 2' centres

Secondary Sedimentation

Type: Walker Process

Size: Two 26' x 6' x 7'9" deep (7,500 gal)

Retention: 4.3 hr

Loading: Surface, 266 gal/ft²/day

Weir, 1,500 gal/ft/day

CHLORINATION

Type: Advance, Model 101

Chlorine Contact Chamber

Size: 13' x 5' x 6' deep (2,180 gal)

Retention: 37.7 min

OUTFALL

- 12" dia pipe to Grand River

SLUDGE HANDLING

Type: Thickening tank

Size: 27' x 20' 8" x 11' 9" (avg)
(6,750 cu ft or 42,000 gal)

'69 REVIEW

GENERAL

A total metered flow of 16.3 million gallons of sewage was treated at a cost of \$5,743.38. Since mechanical difficulties forced the meters out of service during January, February and most of March, previous years' flows for that period were considered in assessing the total plant flow. The resultant addition of 8.5 million gallons brought the 1969 total flow to an estimated 24.8 million gallons. This estimate places the cost of treating one million gallons of sewage at \$231.59, and the cost of removing a pound of BOD at 17 cents compared with last year's 19 cents.

During the year, both the Elora and Fergus Water Pollution Control Plants were operated by plant staff stationed at Fergus. Under the supervision of head office engineers, the staff operated a clean, attractive and very efficient plant for the Village of Elora.

PLANT FLOWS and CHLORINATION

The average daily flow of 0.06 million gallons was 72% of the design flow of 0.083 mil. gal. The maximum daily flow of 0.17 mil. gal. occurred in August. The design flow of 0.083 mgd was exceeded 10% of the time in

1969. During January, February and March there were mechanical problems with the flow meter and monthly flows for this period were therefore estimated.

The average chlorine dosage rate of 4.9 milligrams per litre was sufficient to maintain an average chlorine residual of 0.5 mg/l in the final effluent. The chlorine is used to disinfect the plant effluent and for sludge stabilization.

PLANT EFFICIENCY

The average BOD and suspended solids concentrations in the influent were 142 and 270 mg/l respectively compared with 140 and 220 mg/l in 1968. The effluent BOD and suspended solids concentrations of 4 and 9 mg/l were well within the OWRC objectives of 15 mg/l for each and indicate excellent treatment. Removal efficiencies were both 97%.

CONCLUSIONS and RECOMMENDATIONS

The plant was operated efficiently during 1969, providing excellent treatment with the effluent BOD and suspended solids concentrations well within the OWRC objectives.

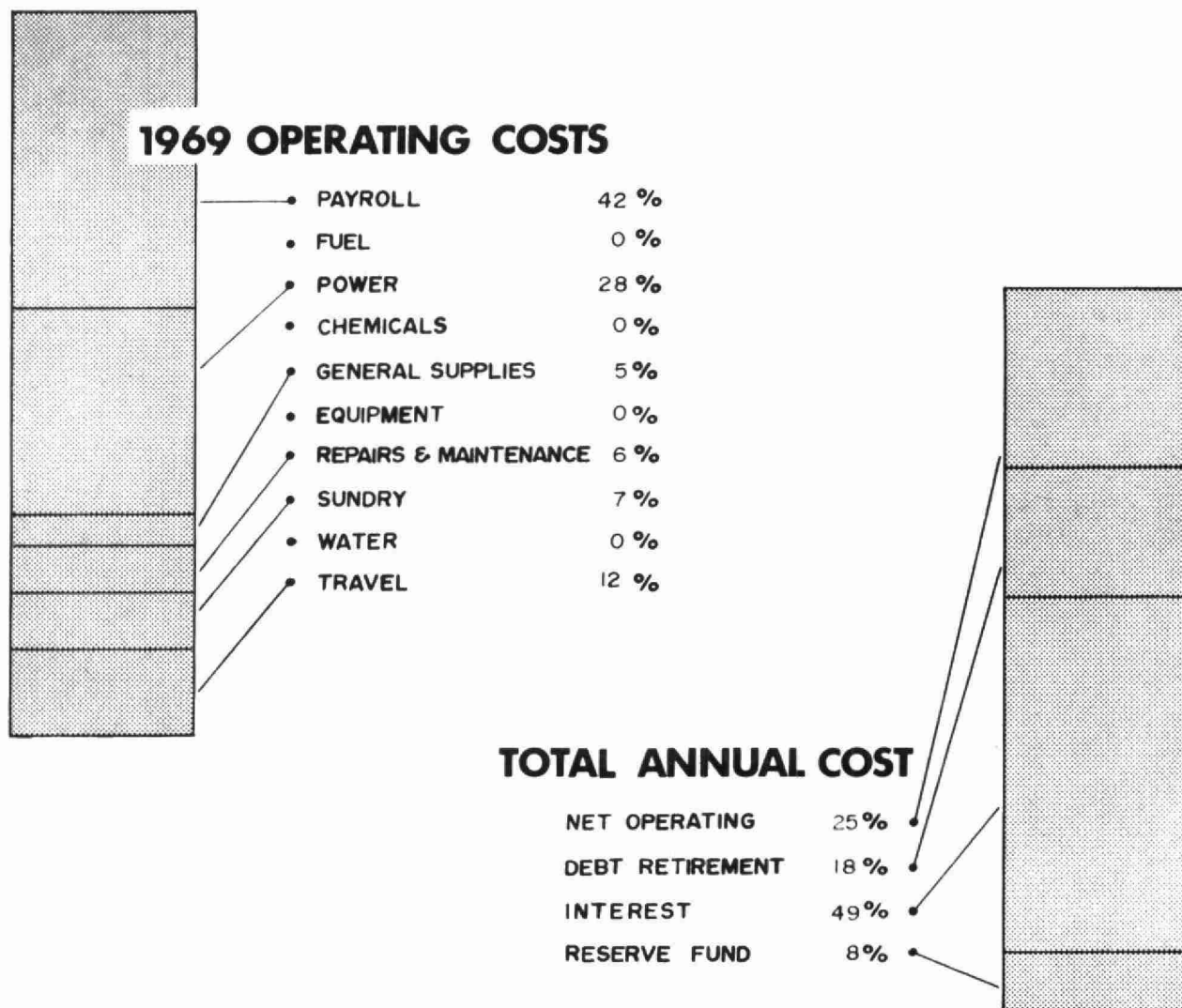
The present staffing arrangements should be maintained. With the proposed development of the Village of Elora, plans to expand the capacity of the sewage treatment plant should be undertaken.

PROJECT COSTS

NET CAPITAL COST (Final)		\$361,285.04
DEDUCT - Payments from Municipalities	\$ 41,231.20	
- Portion financed by CMHC/MDLB (Final)	<u>122,424.66</u>	<u>163,655.86</u>
Long Term Debt to OWRC		<u>\$197,629.18</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1969		\$ <u>25,950.21</u>
Net Operating		\$ 5,743.38
Debt Retirement		3,988.00
Reserve		1,815.58
Interest Charged		<u>11,064.24</u>
TOTAL		\$ <u>22,611.20</u>

RESERVE ACCOUNT

Balance @ January 1, 1969	\$ 10,335.34
Deposited by Municipalities	1,815.58
Interest Earned	<u>628.22</u>
	\$ 12,779.14
Less Expenditures	<u>-</u>
Balance @ December 31, 1969	\$ <u>12,779.14</u>



Yearly Operating Costs

YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER MILLION GAL	COST PER LB OF BOD REMOVED
1965	13.11	\$6,679.39	\$509.45	32 cents
1966	18.13	6,508.59	358.76	16 cents
1967	23.57	6,370.25	270.24	12 cents
1968	29.29	7,647.34	261.09	19 cents
1969	24.8 *	5,743.38	231.59	17 cents

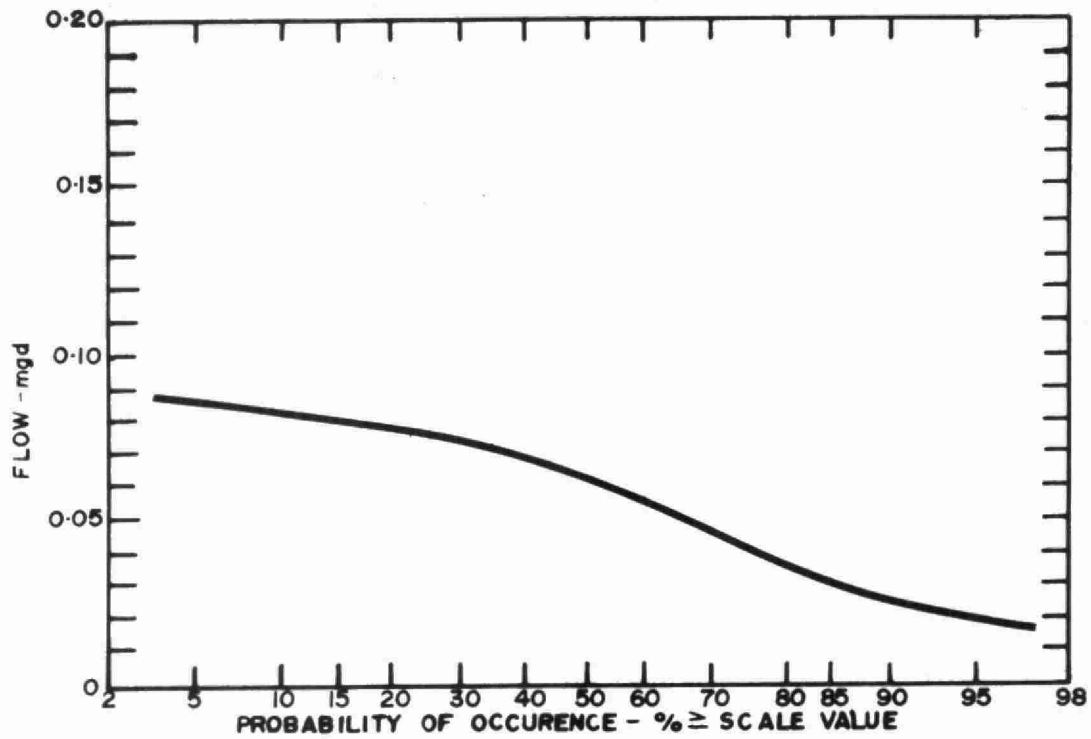
* Estimated

Monthly Operating Costs

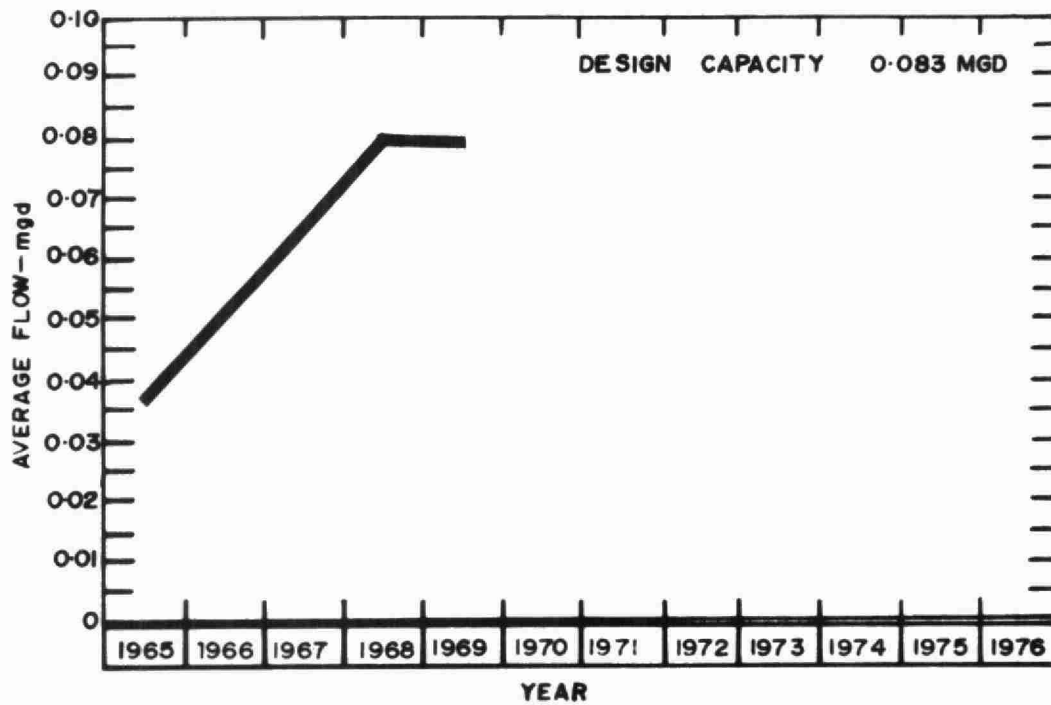
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY	WATER	TRAVEL
JAN	192.80	-	-	-	166.88	-	-	-	12.80	13.12	-	-
FEB	697.56	427.11	-	-	166.88	-	26.68	-	-	14.49	-	62.40
MAR	441.91	175.77	-	-	153.38	-	28.56	-	-	23.00	-	61.20
APR	306.40	-	-	-	163.51	-	17.32	-	46.26	15.71	--	63.60
MAY	826.18	481.31	-	-	149.99	-	5.88	-	48.48	79.32	-	61.20
JUNE	280.26	48.89	-	-	116.25	-	-	-	38.31	15.61	-	61.20
JULY	318.54	75.42	-	-	119.62	-	17.88	-	60.00	12.02	-	33.60
AUG	368.58	-	-	-	129.75	-	19.82	-	125.00	1.61	-	92.40
SEPT	837.90	603.93	-	-	102.75	-	11.72	-	32.75	25.55	-	61.20
OCT	468.68	206.70	-	-	112.87	-	75.89	-	-	12.02	-	61.20
NOV	442.35	206.38	-	-	116.25	-	24.81	-	-	31.31	-	63.60
DEC	562.22	208.80	-	-	112.87	-	47.21	-	-	134.54	-	58.80
TOTAL	5743.38	2434.31	-	-	1611.00	-	275.77	-	363.60	378.30	-	680.40



PROCESS DATA



F L O W S



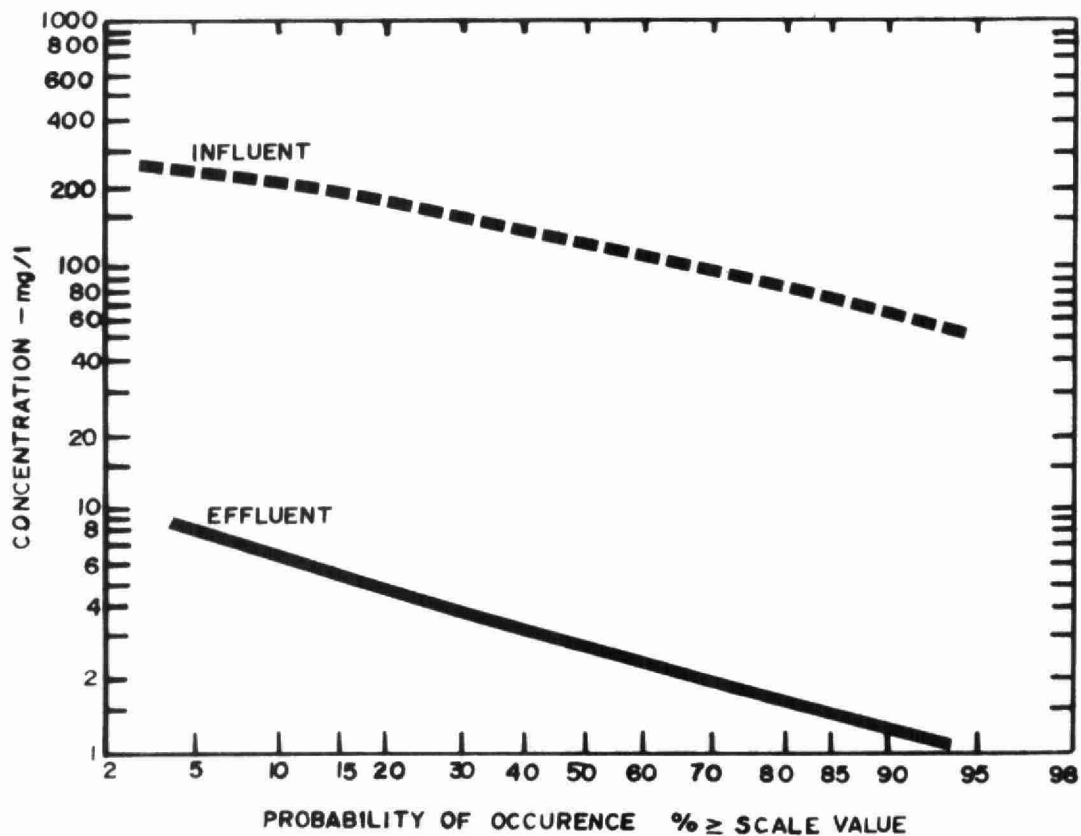
PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM DAILY FLOW mil gal	MINIMUM DAILY FLOW mil gal	CHLORINE USED 10 pounds	DOSAGE mg/l
JAN	o/s	o/s	o/s	o/s	0	-
FEB	o/s	o/s	o/s	o/s	48	-
MAR	.51 *	.09	.11	.06	110	-
APR	2.29	.08	.08	.07	63	2.8
MAY	2.29	.08	.08	.07	71	3.1
JUNE	2.07	.07	.07	.06	63	3.0
JULY	2.10	.07	.07	.06	101	4.8
AUG	1.76	.05	.15	.02	86	4.9
SEPT	1.14	.04	.05	.02	84	7.4
OCT	1.19	.04	.07	.02	147	12.3
NOV	1.43	.05	.06	.03	126	8.8
DEC	1.54	.05	.07	.03	133	8.6
TOTAL	16.32**	-	-	-	*** 1032	-
AVERAGE	-	.06	-	-	86	-

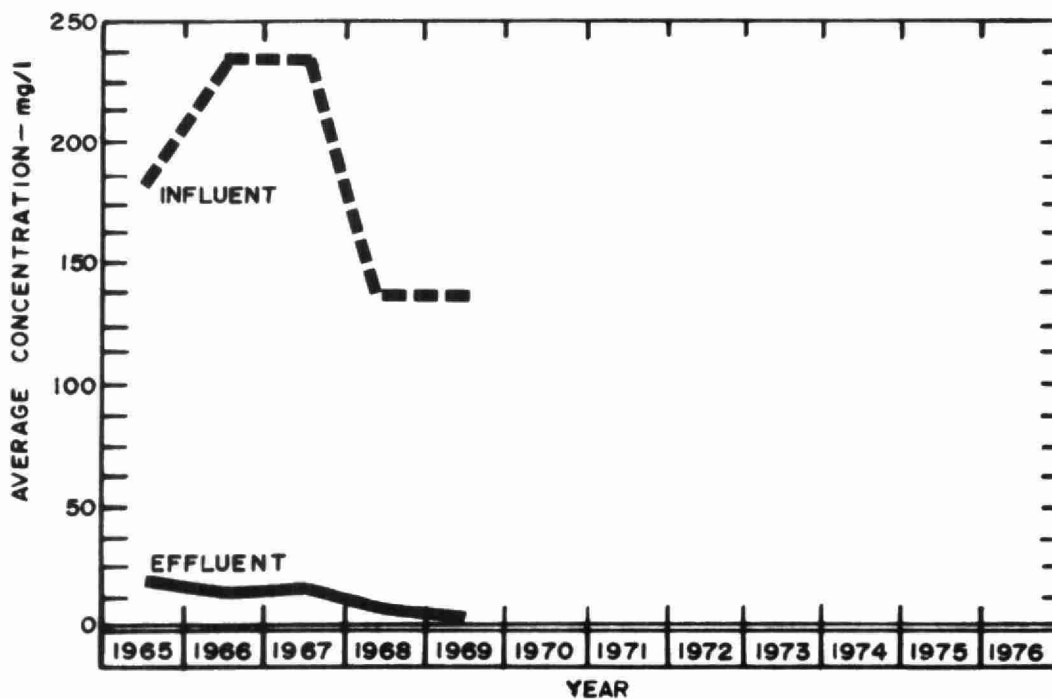
* 6 days' flow

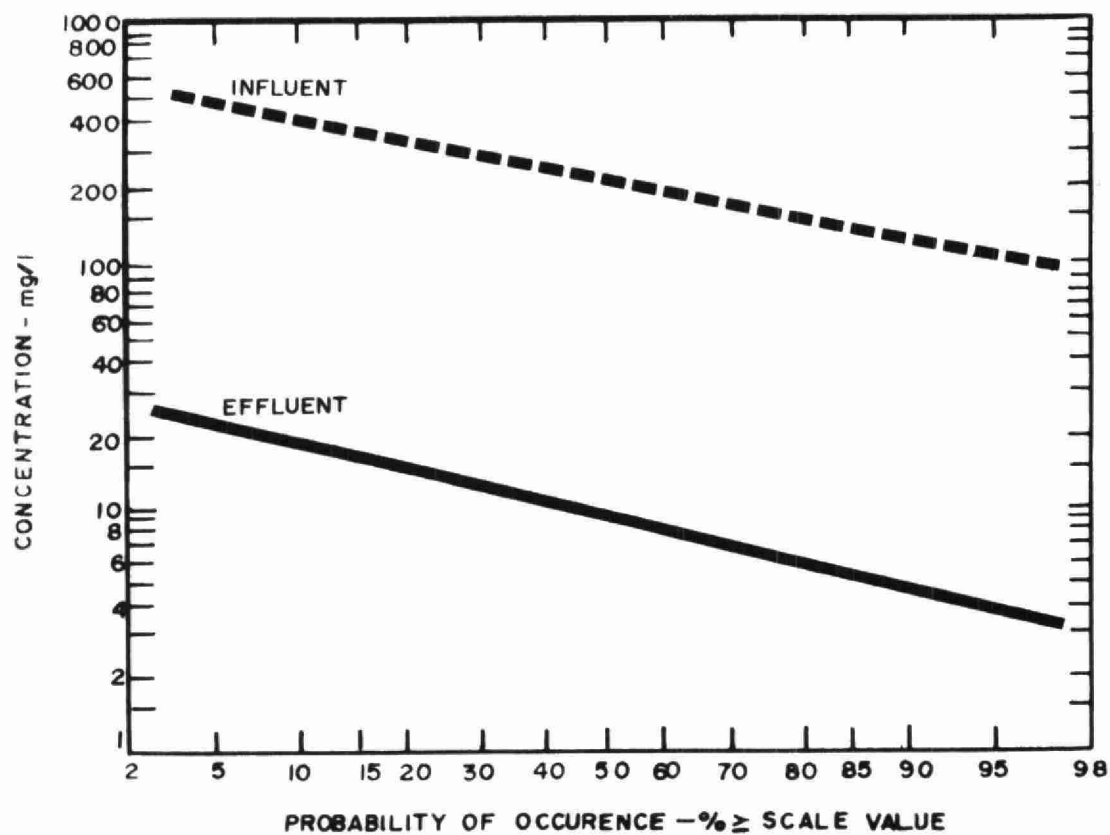
** 282 days' flow

*** Of this total 248 lbs. were used for purposes other than those of effluent chlorination.

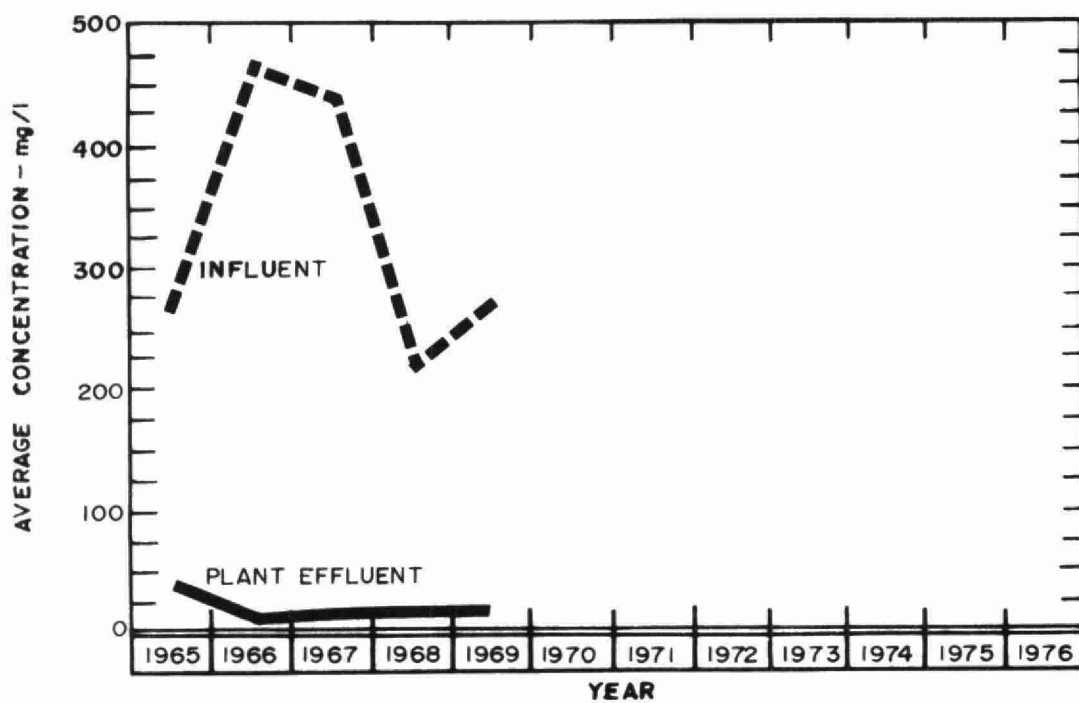


BIOCHEMICAL OXYGEN DEMAND





SUSPENDED SOLIDS



PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT REMOVAL
	INF. mg/l	EFF. mg/l	REDUCTION		INF. CONCN mg/l	EFF. CONCN mg/l	REDUCTION		
			%	10 ³ pounds			%	10 ³ pounds	cu
JAN	90	6	93	-	180	2	99	-	6
FEB	75	3	96	-	260	5	98	-	2
MAR	102	6	94	2.5	195	20	90	4.6	8
APR	107	3	97	2.3	230	8	97	2.8	12
MAY	185	4	98	4.2	480	8	98	10.8	4
JUNE	102	2	98	2.1	192	5	97	3.8	4
JULY	100	2	98	2.1	182	5	97	3.7	42
AUG	102	4	96	1.7	162	8	95	2.7	9
SEPT	370	3	99	4.2	590	7	99	6.6	16
OCT	170	2	99	2.0	293	10	97	3.4	6
NOV	194	5	97	2.7	264	13	95	3.6	8
DEC	145	5	97	2.2	213	12	94	3.1	8
TOTAL	-	-	-	-	-	-	-	-	125
AVERAGE	142	4	97	2.6	270	9	97	4.5	11

AERATION

MONTH	AVG DAILY FLOW mil gal	AERATION INF.		SECONDY. EFF.		MLSS CONCN mg /l	F/M lb BOD lb MLSS	AIR USED 1000 cu ft lb BOD	WASTE SLUDGE lb/DAY
		BOD	SS	BOD	SS				
		mg/l	CONCN mg/l	mg/l	CONCN mg/l				
JAN	-	90	180	6	2	6180	-	-	-
FEB	-	75	260	3	5	5890	-	-	-
MAR	.10	102	195	6	20	6260	.02	3.2	-
APR	.09	107	230	3	8	4480	.02	3.3	-
MAY	.09	185	480	4	8	4740	.04	2.0	-
JUNE	.08	102	192	2	5	5520	.02	3.8	-
JULY	.08	100	182	2	5	5740	.02	3.9	-
AUG	.06	102	162	4	8	4500	.02	4.7	-
SEPT	.04	370	590	3	7	7010	.03	1.9	-
OCT	.04	170	293	2	10	8390	.02	4.0	-
NOV	.06	194	264	5	13	7200	.02	2.9	-
DEC	.06	145	213	5	12	5440	.02	3.7	-
TOTAL	-	-	-	-	-	-	-	-	-
AVERAGE	.08	142	270	4	9	5940	.02	3.3	-

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